

CLAIMS

1. A flat tube making platelike body in the form of a single metal plate in its entirety and comprising two flat wall forming portions having the same width and interconnected by a connecting portion, side wall forming portions projecting from the respective flat wall forming portions toward the same direction and each formed integrally with one side edge of the flat wall forming portion opposite to the connecting portion, the side wall forming portions being butted against each other when metal plate is folded into a hairpin form at the connecting portion, and a reinforcing wall forming portion integrally formed on each of the flat wall forming portions so as to project in the same direction as the side wall forming portion thereon, the reinforcing wall forming portion of one of the flat wall forming portions being butted against that of the other flat wall forming portion as a pair when the metal plate is folded into a hairpin form at the connecting portion,

one of the pair of reinforcing wall forming portions to be butted against each other being smaller in thickness than the other reinforcing wall forming portion.

2. A flat tube making platelike body according to claim 1 wherein a thin reinforcing wall forming portion and a thick reinforcing wall forming portion are provided on each of the flat wall forming portions integrally therewith.

3. A flat tube making platelike body according to claim 2 wherein each of the flat wall forming portions is integrally provided with thin reinforcing wall forming portions and thick reinforcing wall forming portions arranged alternately

thereon.

4. A flat tube making platelike body according to claim 1 wherein the thin reinforcing wall forming portion is up to 0.5 mm in thickness.

5 5. A flat tube making platelike body according to claim 4 wherein the thin reinforcing wall forming portion is up to 0.35 mm in thickness.

6. A flat tube making platelike body according to claim 1 wherein the difference between the thickness of the thin
10 reinforcing wall forming portion and the thickness of the thick reinforcing wall forming portion is at least 0.05 mm.

7. A flat tube making platelike body according to claim 6 wherein the difference between the thickness of the thin reinforcing wall forming portion and the thickness of the thick
15 reinforcing wall forming portion is up to 0.3 mm.

8. A flat tube making platelike body according to claim 1 wherein when the pair of reinforcing wall forming portions are butted against each other by folding the metal plate into a hairpin form at the connecting portion, opposite side faces
20 of the thin reinforcing wall forming portion are positioned inwardly of opposite side faces of the thick reinforcing wall forming portion.

9. A flat tube making platelike body according to claim 1 wherein an end face of one of the pair of reinforcing wall forming portions to be butted against each other is provided
25 at an intermediate portion of width thereof with a ridge extending longitudinally thereof, and the other reinforcing wall forming portion is provided in an end face thereof with a groove extending

longitudinally thereof for the ridge to fit in.

10. A flat tube making platelike body according to claim 9 wherein the ridge is formed on an end face of the thin reinforcing wall forming portion, and the groove is formed in an end face of the thick reinforcing wall forming portion.

11. A flat tube making platelike body according to claim 1 wherein an end face of the thick reinforcing wall forming portion is provided in the center of width thereof with a groove extending longitudinally of the thick reinforcing wall forming portion.

12. A flat tube making platelike body according to claim 1 wherein the thick reinforcing wall forming portion is provided in an end face thereof with a groove extending longitudinally of the thick reinforcing wall forming portion for an end of the thin reinforcing wall forming portion to fit in.

13. A flat tube fabricated from a flat tube making platelike body according to claim 1 by folding the platelike body into a hairpin form at the connecting portion to butt the side wall forming portions against each other and the pair of reinforcing wall forming portions against each other, and brazing the side wall forming portions to each other and the pair of reinforcing wall forming portions to each other in this state to cause the two flat wall forming portions to provide a pair of opposed flat walls, the connecting portion to provide one side wall, the side wall forming portions as brazed to each other to provide the other side wall, and the brazed pair of reinforcing wall forming portions to provide

a reinforcing wall.

14. A flat tube according to claim 13 wherein opposite side faces of the thin reinforcing wall forming portion are positioned inwardly of opposite side faces of the thick reinforcing wall forming portion, and a fillet is formed between opposed end faces of the pair of reinforcing wall forming portions and between opposite side edges of end face of the thin reinforcing wall forming portion and opposite side edges of end face of the thick reinforcing wall forming portion.

10 15. A flat tube fabricated from a flat tube making platelike body according to claim 12 by folding the platelike body into a hairpin form at the connecting portion to butt the side wall forming portions against each other and the pair of reinforcing wall forming portions against each other, 15 and to fit the end of the thin reinforcing wall forming portion into the groove of the thick reinforcing wall forming portion, and brazing the side wall forming portions to each other and the pair of reinforcing wall forming portions to each other in this state to cause the two flat wall forming portions to 20 provide a pair of opposed flat walls, the connecting portion to provide one side wall, the side wall forming portions as brazed to each other to provide the other side wall, and the brazed pair of reinforcing wall forming portions to provide a reinforcing wall.

25 16. A flat tube according to claim 15 wherein a fillet is formed between an end face of the thin reinforcing wall forming portion and a bottom wall of the groove of the thick reinforcing wall forming portion, and between opposite side

faces of a portion existing outside the groove of the thin reinforcing wall forming portion and opposite side edges of end face of the thick reinforcing wall forming portion.

17. A heat exchanger comprising pair of headers arranged
5 in parallel as spaced apart from each other, a plurality of heat exchange tubes each comprising a flat tube according to claim 13 or 15 and having opposite ends joined to the respective headers, and fins arranged in respective air passing clearances between respective adjacent pairs of heat exchange tubes and
10 each brazed to the pair of heat exchange tubes adjacent thereto.

18. A process for fabricating a heat exchanger characterized by making a plurality of folded bodies from flat tube making platelike bodies according to any one of claims 1 to 12 by folding each of the platelike bodies into a hairpin
15 form to butt the side wall forming portions against each other and the pair of reinforcing wall forming portions against each other, preparing a pair of headers each having folded body inserting holes arranged at a spacing and fins, arranging the pair of headers as spaced apart from each other and arranging
20 the folded bodies and the fins alternately, inserting opposite ends of the folded bodies into the respective inserting holes of the headers, fabricating flat tubes by brazing the side wall forming portions of each folded body to each other and the pair of reinforcing wall forming portions thereof to each
25 other, and brazing the flat tubes to the headers and each fin to the flat tubes adjacent thereto simultaneously with the fabrication of the flat tubes.

19. A refrigeration cycle comprising a compressor, a

condenser, an evaporator and a pressure reducing device for use with a chlorofluorocarbon refrigerant, the condenser comprising a heat exchanger according to claim 17.

20. A refrigeration cycle comprising a compressor, a
5 condenser, an evaporator and a pressure reducing device for use with a chlorofluorocarbon refrigerant, the evaporator comprising a heat exchanger according to claim 17.

21. A supercritical refrigeration cycle which comprises a compressor, a gas cooler, an evaporator, a pressure reducing
10 device and an intermediate heat exchanger for subjecting a refrigerant flowing out of the gas cooler and a refrigerant flowing out of the evaporator to heat exchange, and wherein a supercritical refrigerant is used, the gas cooler comprising a heat exchanger according to claim 17.

15 22. A supercritical refrigeration cycle which comprises a compressor, a gas cooler, an evaporator, a pressure reducing device and an intermediate heat exchanger for subjecting a refrigerant flowing out of the gas cooler and a refrigerant flowing out of the evaporator to heat exchange, and wherein
20 a supercritical refrigerant is used, the evaporator comprising a heat exchanger according to claim 17.

23. A vehicle having installed therein a refrigeration cycle according to claim 19 as a vehicle air conditioner.

24. A vehicle having installed therein a refrigeration
25 cycle according to claim 20 as a vehicle air conditioner.

25. A vehicle having installed therein a refrigeration cycle according to claim 21 as a vehicle air conditioner.

26. A vehicle having installed therein a refrigeration

cycle according to claim 22 as a vehicle air conditioner.